

Assumptions:

- ① Isolated system: nothing is exchanged with the outside.
no energy
no matter
- ② Ignore any loss of energy to the calorimeter.
- ③ Constant pressure
- ④ Solutions have the same density and specific heat capacity as water:
1g/mL and 4.184 J/g°C
dilute solutions

Concepts: heat system = heat surroundings

$$\text{heat} = Q = \Delta H$$

$$Q = m c \Delta T$$

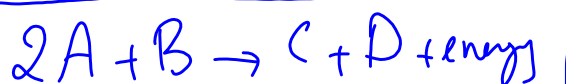
$$Q_{\text{surroundings}} = \underset{\substack{\uparrow \\ \text{grams} = \text{milliliters} \\ \uparrow \\ \text{measure volume}}}{\text{mass}} \times \underset{\substack{\uparrow \\ \text{known}}}{4.184 \text{ J/g}^\circ\text{C}} \times \underset{\substack{\uparrow \\ \text{measure}}}{(T_f - T_i)}$$

$$Q_{\text{system}} = -Q_{\text{surroundings}}$$

↑
joules or kilojoules

$$\Delta H = Q_{\text{system}} = \text{J or kJ}$$

$$\textcircled{A} \quad \frac{\Delta H}{n} \Rightarrow \text{kJ/mol} \quad \Delta H^\circ \leftarrow \text{standard conditions}$$



thermochemical equation

heat of solution of CaCl₂ (solid)
(dissolving)